

1978

SWAN LAKE NATIONAL WILDLIFE REFUGE
Sumner, Missouri

ANNUAL NARRATIVE REPORT
Calendar Year 1978

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR



1..... 2.....3.....4.....5.....6

February 1979

DL Graber

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Review and Approvals

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James W. Salgado
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 Area Office Date

Swan Lake NWR, Missouri
Refuge

Regional Office Date

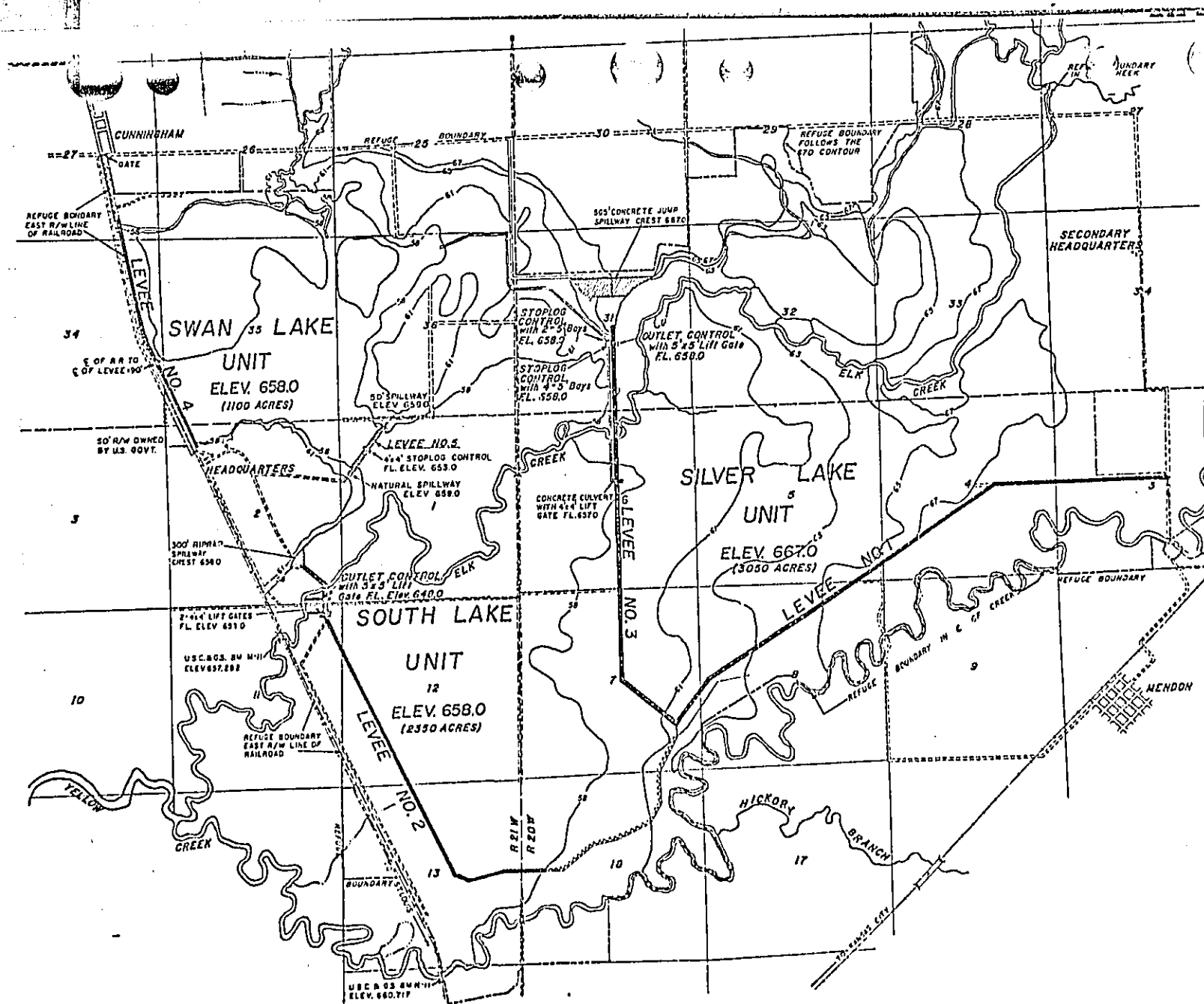


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I. GENERAL

A. Introduction

Swan Lake National Wildlife Refuge occupies 10,670 acres in the bottomlands of the Grand River, Elk Creek, and Yellow Creek. It is situated in the north-central part of Missouri which is characterized by gently rolling prairie, interrupted by many southerly flowing streams. Forest cover has typically been removed and now remains as second growth timber only along stream banks and the sides of adjacent hills.

Refuge topography is flat with the exception of an area of rolling prairie on the east side. Much of it was marginal farmland subject to annual flooding, and attempts to drain and farm Swan Lake at the turn of the century were unsuccessful.

Shortly after being set aside in 1937, CCC levee work created Silver and South Lakes and enlarged Swan Lake. These shallow impoundments cover almost half of the refuge. Moist soil plants and some 2700 acres of cropland attract one of the largest single concentrations of Canada geese in North America and this refuge is the primary wintering area for the Eastern Prairie Population whose numbers have exceeded 100,000 every year since 1962.

Our present goal is to produce about 125,000 bushels of grain for wildlife annually. This can only be achieved by force account farming and then only if the crops are not flooded out. Total habitat diversity is enhanced by 1000 acres of the southern boundary along Yellow Creek that are set aside to preserve mixed bottomland hardwoods with oxbow lakes and another 1500 acres covered by forest, permanent grass or native prairie.

B. Climatic and Habitat Conditions

Our average annual precipitation is 38.27 inches, and in 1978 we received 34.00 inches. The period of March through May, however, was very wet and unsettled. The refuge was flooded four times during the months of March and April. Fishing on the refuge scheduled to open March 1, had to be delayed until April 1. Only two and one-half days of farm field work could be accomplished by May 31, because of the wet conditions. It was not until September that another flood occurred. It was comparatively minor but some 250 acres of wheat were lost to it.

temperatures remained below freezing and often below zero in January, February, and most of March. Weather in March was particularly unsettled. It vacillated from blizzard to sunshine and back to blizzard, from -15° to +80°, from snow drifts to flood. The roads were either too deep in snow, or too deep in water, or too deep in mud for travel. June through September was mostly hot and dry. Crops grew well and despite late plantings almost all matured before our first hard frost occurred on October 10. October was beautiful. Open House was held October 22. The day was bright and warm with autumn colors at their finest. Although somewhat grey, dismal and muddy, November and December were tolerable until December 31, when 15 inches of snow brought all activities to a halt for the year.

C. Land Acquisition

1. Fee Title

None.

2. Easements

Not applicable.

D. System Status

1. Objectives

The main objective of this refuge is to provide for waterfowl. Swan Lake National Wildlife Refuge has been mandated by the Mississippi Flyway Technical Council to produce 125,000 bushels of grain annually. This commitment is to help feed 200,000 plus Canada geese in the Eastern Prairie Population that winters in the Swan Lake Zone. To meet this commitment, the refuge in fiscal year 1978 expended 396 man-days and \$64,486 in the migratory bird cropland program.

In the Interpretation and Recreation program, 175,000 activity hours were recorded in Wildlife Recreation. This was our largest visitation output in the I&R program.

The disparity between system objectives and refuge outputs at Swan Lake NWR is narrowing. More realistic objectives and BLHP have solved some of our problems, but with increased public pressure on the resource and inflation relief may be short lived.

2. Funding

Fiscal year 1978 funding:

Fiscal year 1977 funding:

Sub-activity	Planning Allowance	Planning Allowance
1110	\$400	
1210	\$157,200	\$127,653
Rehab		\$53,000
1220	\$1,000	\$1,000
1230	\$500	\$4,000
1240	\$33,200	\$26,200
1400		\$300
	<u>\$192,300</u>	<u>\$212,153</u>

In fiscal year 1978, under BLHP, 10,003 tons of gravel were spread on 10 miles of road at a cost of \$47,014.

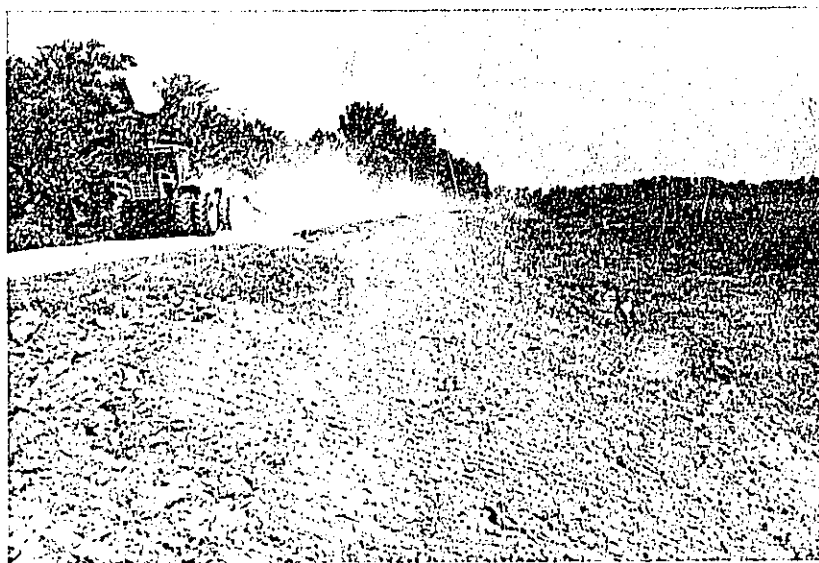
Manpower pattern is as shown on first page.

II. CONSTRUCTION AND MAINTENANCE

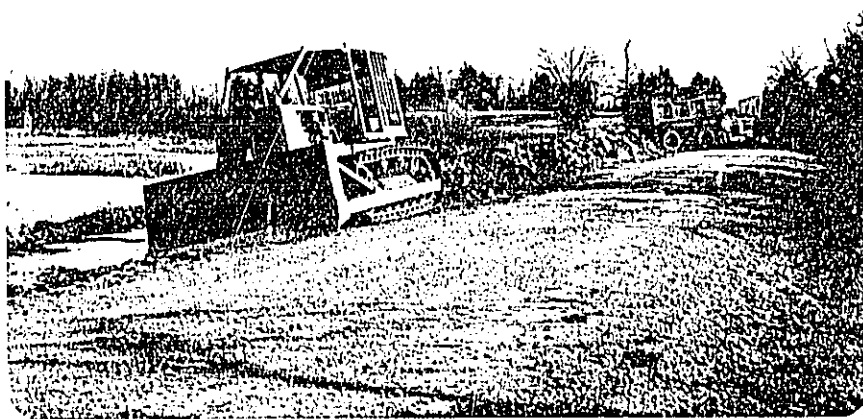
A. Construction

A severe flood occurred in October 1973, causing considerable damage to levees, roads, fields, and crops. Flood damage money amounting to \$390,000 was allotted in 1975 to repair damages and mitigate damages of future floods. Damage repair work includes earthwork and riprap protection of levees 2 (South Pool), 3 (Silver Lake), and 4 (Swan Lake). Mitigating measures include changing the location of Silver Lake emergency spillway to reroute flood waters away from some 750 acres of cropland. Construction of a training dike in conjunction with the new spillway to protect another 450 acres of cropland. Reworking a transfer ditch to allow better management and use of water, and install three water control structures. Unfortunately, the flood damage money was not enough to complete the project and priorities as to which element had to be completed were set up.

Work begun in 1977 on levee 3; the training dike, the transfer ditch, the emergency spillway, and a water control structure were completed in 1978. Under a different contract work on levee 4 and a water control structure were also completed in 1978. This depleted the flood damage fund, and completion of the flood damage project is dependent upon approval of a BLHP project.



Construction - Flood damage repair work on Levee 4.
Earthen fill.



Construction - Flood damage repair work on Levee 4.
Riprap placement.

B. Maintenance

In 1977, \$5000 rehab money were allotted to improve the safety and appearance of the silo observation tower. A circular, steel stairway was purchased, but the cost was so high there was not enough money left to have the stairway installed. The stairway and steel deck were installed with force-account labor in 1978, and the tower reopened to the public in April.

Some 2996 tons of road rock were placed on the main entrance road in January. This was a rehab project carryover from 1977. An additional 10,003 tons of road rock were placed on refuge roads in May. This was a BLHP project.

New guardrails and grills were fabricated and installed at water control structures as a safety measure. Three trap sites were resurfaced and new cannon blocks installed. YCC painted the metal equipment building.

About 300 tons of riprap were purchased and used to patch eroded spots in levee 3. More is needed. This erosion occurred after the flood damage project was submitted and funded.

C. Wildfire

No wildfires occurred on the refuge.

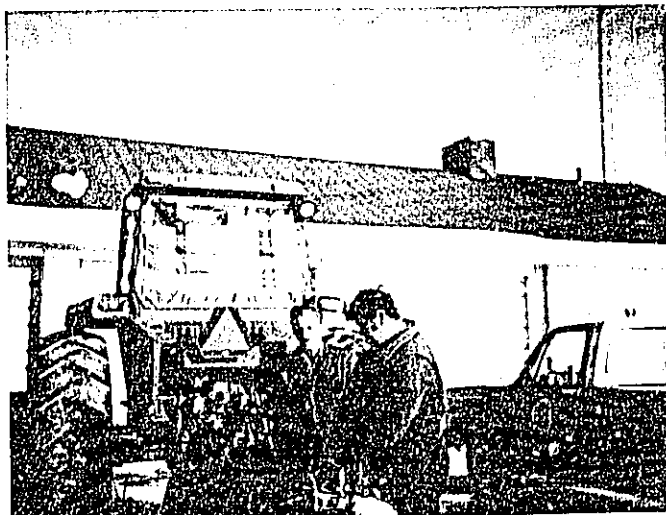
III. HABITAT MANAGEMENT

A. Croplands

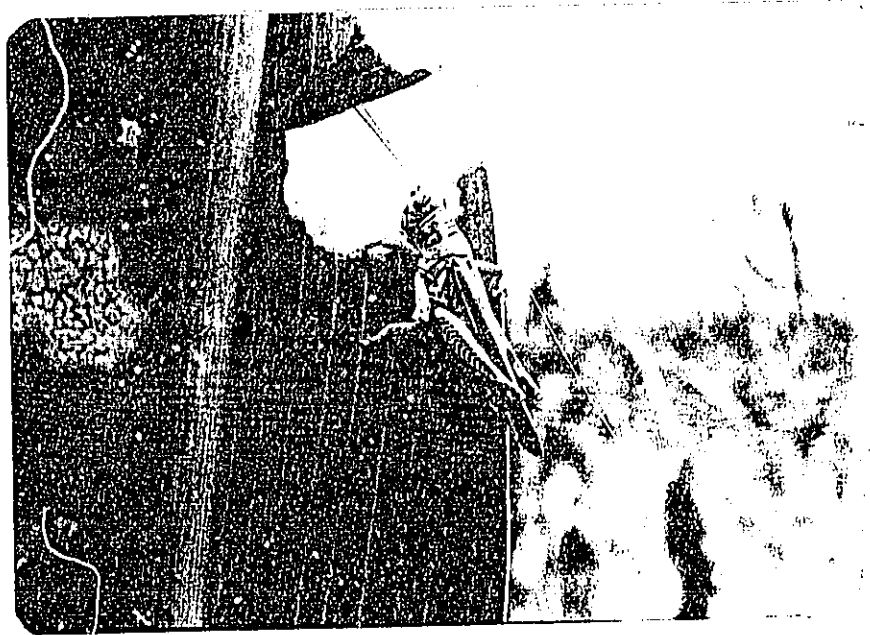
Spring floods delayed the start of farming operations by 90 days. Thus the fields were dry enough to start disking on June 1 and by July 1 refuge personnel along with Missouri Department of Conservation employees had planted 600 acres of corn and 600 acres of milo. Approximately 100 acres of corn were damaged by cutworms and replanted to milo. The extremely wet land seemed to be more susceptible to cutworm infestation than well drained land. Total acreage planted was 500 corn and 700 milo.

All of the corn and 100 acres of milo were fertilized at a rate of 100N, 20P, and 100K per acre. Atrazine was applied at three pounds per acre on the fertilized land to control giant foxtail.

The corn yield was 40,500 bushels, the milo yield was 65,400 bushels, for a total grain yield of 105,900 bushels. In terms of wildlife this provided enough food for 11,860,000 goose-use days on the refuge.



Maintenance - Bio. Tech. Hull and Tractor Oper.
Milligan checking our new scraper



Habitat Management - Feeding cutworms and
grasshoppers leaves little for geese.

Winter wheat was planted to 1300 acres for browse. A late September flood destroyed 200 acres of wheat and this was reseeded aerially on October 3. There was virtually no growth from the reseeding as the geese devoured the wheat seed.

The Missouri Department of Conservation was responsible for planting 750 acres of the winter wheat. State personnel, headquartered at Swan Lake, are a very integral part of the farming program. Without cooperation between State and Federal personnel in the planting of corn, milo, and winter wheat the present refuge farming program would no longer exist.

We had one permitted farmer on the refuge in 1978. He planted 80 acres to corn and 13 acres to milo. Our share of the corn was harvested and stored to be used as bait in our goose banding operation. The milo crop was left for wildlife.

Farming for wildlife and particularly for geese is an established and proven practice. Farming is considered the single most important program at Swan Lake NWR. It provides for the geese, and almost all outputs are contingent upon the geese.

B. Grasslands

State personnel mowed 350 acres of grasslands in the public hunting area to enhance goose grazing and loafing. The refuge staff established fire breaks around 250 acres of grassland. Big and little bluestems, Indian and switch grasses in this area are being crowded out by invading woody species. Past attempts to halt this encroachment by mowing have failed, especially in sections where honey locust has taken root. A March or April burn is planned in 1979, for this area. We expect the first burn to retard this invasion. Subsequent burns planned on a two-year rotation will eliminate the woody vegetation and regenerate the native grasses.

Eight miles of levees were mowed to prevent their take-over by black willows. The geese are quite happy with this practice since they use the levees for loafing sites.

C. Wetlands

Water levels in Swan Lake and South Pool were lowered in the spring to produce moist soil foods. An estimated 750,000 pounds of moist soil grain were grown on 1000 acres.

Wild millet contributed almost 75 percent of the moist soil crop. Usually these two lakes are flooded in the fall to enhance waterfowl utilization of the moist soil plants, but repair work on levee 4 prevented this. However, the low water levels did not appear to affect waterfowl usage of the moist soil habitat. Due to the low water levels an early freeze of the lakes did occur.

One of our biggest problems in wetlands management is the silting in of our pools. Questionable farming practices in the local area, fall plowing and ditch clearing, have created heavy silt loads in runoff waters, most of which appear to be settling in our pools. The solution is twofold; education of the farmer and convincing him to farm differently, and a DLHP project to correct the damage. Neither appear likely at the moment.

D. Forestlands

Nothing to report.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

About 1000 acres of bottomland timber have been designated as a Research Natural Area. A new emergency spillway at the south end of Silver Lake empties floodwater into this natural area. We have been directed to monitor the effect these silt laden waters have on the area. It will be difficult to measure or determine what affect this new emergency spillway will have on this area as it is flooded annually with silt laden water from Yellow Creek.

G. Easements for Waterfowl Management

Not applicable.

IV. WILDLIFE

A. Endangered and/or Threatened Species

On February 14, 1978, the bald eagles wintering on Swan Lake were classified as endangered. This action was rather confusing from a management standpoint, as the eagles wintering on Swan Lake spend the other six months of the year in Wisconsin and Minnesota where they are classified as threatened.

The bald eagle population peaked at 128 in December. Of this 82 were immatures and 46 were adults. One immature golden eagle was also observed.

Eagles use the refuge for feeding, loafing and roosting. They begin arriving in October, peak in December-January, and then return north in March-April. In the winter the eagles feed on goose carcasses, while in the spring, after the thaw, winter-killed fish become an important part of their diet. Wintering eagle numbers on the refuge are directly related to the goose population.

The following wildlife found on the refuge are on Missouri's endangered species list: marsh hawk, sharp-shinned hawk, Cooper's hawk, king rail, upland sandpiper, least tern, osprey, smooth green snake, and long tailed weasel.

B. Migratory Birds

1. Waterfowl

It was a difficult year for the geese in the Eastern Prairie Population. In January the post hunting season count totaled 269,000 geese, of which 181,000 were on the refuge. The fall counts revealed a peak population of 193,000 EPP birds; 114,000 were on the refuge. The decline in population can be attributed to a very poor nesting season. When the geese left last spring they were stressed due to the extremely harsh winter. Upon nest initiation, a 22" snowfall occurred. The weather continued cold and wet during the nesting season. Comparison of immature/adult ratio data from banding operations in pre-hunting season 1977, and pre-hunting season 1978, indicated poor nesting success. Pre-season 1977 immature/adult ratio was .47. Pre-season 1978 immature/adult ratio was .21. The immature/adult ratio of geese checked in by hunters also indicated poor nesting success. In 1978, immature/adult ratio was .80; 1977, 1.76; 1976, 2.11; 1975, 3.29; 1974, 2.01; and 1973, 2.63. Some State personnel claim that this was the worst production year in the recorded history of the flock.

The hunting season for waterfowl in the Swan Lake Zone began October 24 and ended January 1, 1979. A total of 11,758 hunters utilized the refuge public hunting area, killing 5949 Canada geese for an average kill per hunter of .505. The Zone harvest of Canada geese was 9152 shy

of the 30,000 bird quota. A reduced fall flight, fair weather, and a greater percentage of adult birds in the flock contributed to the lack of hunters' success in the Zone. This year, as in the past two years, when the geese arrived they fed in off-refuge fields. A week after hunting season started the geese began feeding heavily on refuge crops. This discouraged hunters and hunting pressure faded after the first couple of weeks. In order to increase enthusiasm among the goose hunters the daily goose limit was increased from one bird to two on November 27.

Pre-season and post-season banding quotas were met. In the post-season a total of 2354 Canada geese were banded, 482 of which were immatures. In addition, 480 geese were banded for a depredation study in the area. In the fall of 1978, 2088 geese were banded pre-season, 483 of which were immatures.

In both pre-season and post-season the quotas had called for 500 immatures to be banded, or 2000 geese total, whichever came first.

The snow/blue goose population peaked at 32,000. Duck populations on the refuge were down this year. Extremely wet conditions in the spring and fall dispersed the ducks throughout the region. Habitat conditions were excellent on and off refuge. Mallard, pintail, and teal were the most abundant species found on the refuge.

2. Marsh and Water Birds

During the spring and summer a diversity of marsh and water birds could be observed throughout the refuge. Species frequently encountered included: white pelicans, American bitterns, great blue herons, pied billed grebes, great egrets, and cattle egrets. Also on the refuge, but less common were: black-crowned night herons, yellow-crowned night herons, green herons, and double-crested cormorants. A white-faced ibis, a very rare visitor to Swan Lake, was observed feeding on the refuge in September.

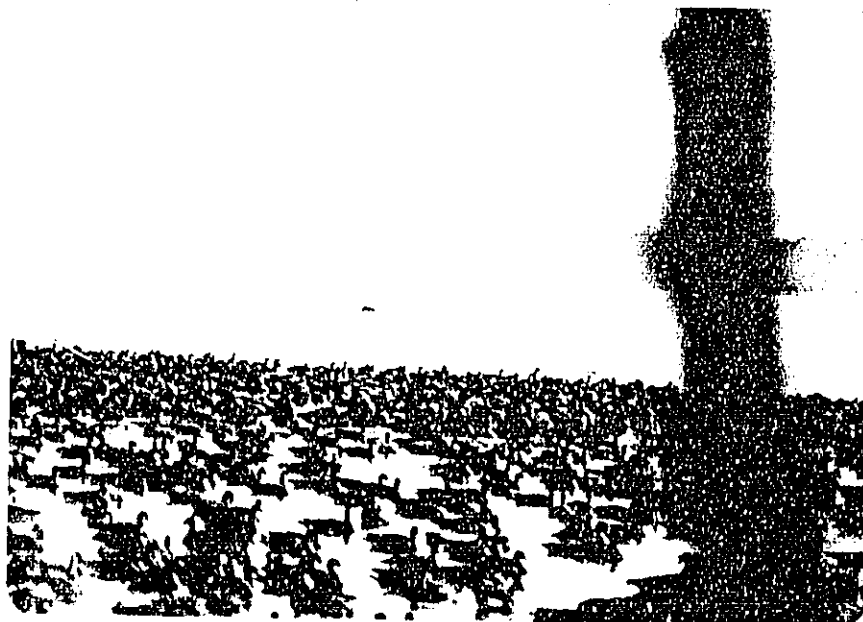
Numerous white pelicans were seen this fall. On September 27, 2500 pelicans were counted on Swan Lake. In August, 150 great blue herons, 200 great egrets, and 50 snowy egrets were on the refuge.

3. Shorebirds, Gulls, Terns and Allied Species

Conditions were favorable for shorebirds on the refuge this



Habitat Management - The "Tordon Terror"
did some managing without charge to the
government!



Wildlife - Snow geese?

year. Common species seen were: greater yellowlegs, killdeer, black terns, common snipe, ring-billed gull, Bonaparte's gull, and several sandpiper species.

4. Raptors

Raptor populations are quite high on Swan Lake, particularly during periods of waterfowl concentrations. Marsh and red-tailed hawks are the most numerous raptors in the area, with barred, screech, and great horned owls following.

5. Other Migratory Birds

Large flocks of grackles and red winged blackbirds are common in this area. This population build up is causing concern as a large amount of sorghum is grown here. As yet blackbird and grackle depredations have not been a significant problem.

The mourning dove population peaked at 3000 in September. There is a considerable amount of dove nesting on the refuge.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

White-tailed deer, cottontail rabbits, squirrels, and raccoons are classified as game mammals in Missouri. None of these may be hunted on this refuge.

During the late fall and winter months the deer population on the refuge increases dramatically. Herds of 100 to 165 animals can be seen feeding in the fields at dusk. Our latest census was done aerially by the Missouri Department of Conservation, who counted 418 deer.

The squirrel and raccoon populations are good. Rabbit populations are down in the area and on the refuge. Habitat loss and severe winter weather are the most probable causes.

Hunting pressure on deer and raccoons is intense in this area. Undoubtedly the refuge is very valuable in its sanctuary status. Seed stock on the refuge provides for many hunting opportunities off-refuge.

2. Other Mammals

In Missouri there is no closed season or limit on coyotes. Hunting coyotes has become a very popular sport, especially since pelts are worth \$35. The use of snowmobiles, C.B.'s and four-wheel drives seems a bit unethical. The effect of the intensive hunting pressure on the "wily" coyote is unknown. To protect this resource some type of monitoring seems advisable.

3. Resident Birds

Turkeys reside on the refuge in small numbers. There has not been any evidence of production taking place. One cock pheasant was observed in November. The quail population is in a decline due to two consecutive harsh winters.

4. Other Animal Life

No winter fish kill occurred this year. Sport fishing was fair with bullheads, carp, catfish, and buffalo the most common species.

A large number of monarch butterflies was observed in migration on September 9.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

There are no interpretive facilities on the refuge at present. October is our peak visitation period and we gave 21 tours to a total of over 700 people. Over 11,000 visitors attended Open House on Sunday, October 22, and were given a special self-guided auto tour leaflet printed for the occasion.

2. Off-Refuge

Assistant Refuge Manager Kuykendall and Outdoor Recreation Planner Moyer gave talks to a total of 137 students and five teachers at Northwestern High School in Mandon. These talks were well received but we have a long way to go before Environmental Education becomes a viable program here.

Refuge Manager Manko manned a "Conservation Day" booth on March 18, to help launch National Wildlife Week. A total of five news releases were issued during the year, and the refuge brochure and bird list were revised but will not be back from the printer until 1979.

We borrowed a 3-M sound-on-slide projector from the Regional Office and have found it to be a valuable interpretive tool for presentations on bald eagles and steel shot to hunters at the State Headquarters each morning for the duration of the hunting season. The ORP and a YACC enrollee worked together on an eagle poster which the Missouri Department of Conservation had printed and used in each of the 59 goose hunting blinds on the refuge.

A crew from WKDH-TV was on the refuge to film a news short scheduled for their 6 p.m. and 10 p.m. news on October 23, and October 24. Refuge personnel handled over 1000 public inquiries and 43 Golden Age Passports were issued throughout the year. At the end of 1978, a TV video-tape of refuge hunting operations was done for the Kansas City Area Office.

B. Recreation

1. Wildlife Oriented

Fishing is normally permitted from March 1 through September 30, daylight hours only, and in accordance with State and Federal regulations, but was delayed one month this year because of impassable roads and poor weather. Many deep holes have silted in over the years and the quality of fishing on the refuge is declining. Nevertheless, warm water fishing accounts for almost one-fourth of our total visitation. Most fishermen are locals and a great many are repeat visitors.

Geese are the only species which may be hunted on this refuge. During 1978, there were 11,753 refuge hunters averaging three to the blind. The season opened October 24, and lasted through January 1, 1979. All hunters with 12-gauge shotguns were required to shoot steel shot only. A maximum of ten shells per hunter was allowed. The 59 blinds were well maintained and spaced, and hunter success was high. Refuge hunting has been administered under cooperative agreement with the Missouri Department of Conservation since 1955.

Wildlife observation attracted the majority of our 90,000 visitors to the refuge. Canada geese are the focal point and nearly a third of our visitors come to the refuge in October, after the refuge interior is closed for the season. Stabilization of our main entrance levee this year cleared over a mile of this levee and gave people a chance to really see Swan Lake for the first time in years. The main road and observation tower are open throughout the year.

2. Non-Wildlife Oriented

Nothing to report.

C. Enforcement

No law enforcement problems occurred on the refuge until June. Apparently some "sportsmen" felt that the tall cottonwood trees, on our boundary, were ruining the goose hunting on their side of the fence. Their rationale, we assume, was that these tall trees forced the geese to higher flight levels when entering and leaving the refuge. This created too much air space between the goose and goose hunter. To solve this conflict certain individuals poisoned 85 of these trees with Tordon 10K, a very effective poison. In July the area was again attacked by, as Manager Manke describes it, "The Tordon Terror", and 35 more trees were poisoned. The latter attack apparently completed the job as we have had no further incidents. Special Agents were called in to investigate the poisonings, but no solid evidence was collected. As of yet the culprits have not been discovered. The hunters in this area were given some special attention during the goose season. As a passing note, we did not cut down the dead trees, which surely disappointed "The Tordon Terror". Hopefully, new growth will replace them before they topple.

After the tree poisonings it was quiet until October 24, the opening day of waterfowl season. During the 1978 waterfowl season, forty-four citations were issued for violations on the refuge by federal and State agents. This is an increase of ten citations over the 1977 season.

Cases filed in Magistrate Court, Chariton County:

Number		Fines	Court Cost
9	Attempt to take over limit Canada geese	\$900.	\$189.
7	Hunting waterfowl w/unplugged shotgun	70.	147.
6	Refuge trespass with gun	150.	126.

Number		Fines	Court Cost
6	Changing blinds on Swan Lake Refuge	\$30.	\$126.
3	Shooting over 10 shell limit at Canada G.	30.	63.
1	Refuge trespass without gun	10.	21.
1	Possess and use lead shot in steel shot zone	10.	21.
1	Take over limit Canada geese	100.	11.
1	Take protected species on refuge(mallard)	10.	21.
1	Refuge trespass without gun	pending	

Cases filed in U.S. District Court, St. Louis, Missouri:

3	Take Canada geese by use or aid of live decoys	150.
2	Hunt migratory birds on baited area	150.
3	Refuge trespass with gun	pending

During the goose season some deer poaching occurred on the boundary, but as of yet the "night raiders" have not been caught. Hopefully, in 1979, a few poachers will be caught, convicted and assessed a stiff enough penalty to serve as a warning to other would be violators.

VI. OTHER ITEMS

A. Field Investigations

An eagle-waterfowl relationship study that covered a five-year period was concluded, and the report in the form of a Master's Thesis received. This study was in cooperation with the Missouri Cooperative Wildlife Research Unit. The study was begun by Ms. Judy Southern in 1973. Ms. Southern and two others were killed in an airplane crash, while trying to locate marked eagles. Mr. Curtice Griffin completed the study and wrote the report.

A study entitled "Crop Depredation by Waterfowl in North Central Missouri" is in its second year. This is also in cooperation with the Missouri Cooperative Wildlife Research Unit and is the only study that carries a Service monetary grant. The two-year study will cost an estimated \$26,200, of which the Service contractual costs are \$9800. The Cooperative Wildlife Research Unit and Missouri Department of Conservation are the other contributors. Mr. Richard Kahl is the graduate student doing the study. The objectives include quantification of crop damage by geese, relate activities of geese to proximate factors of crops, and long term management techniques to alleviate depredations problems.

Refuge and YACC personnel participated in a large scale dove nesting study designed to determine the effects September hunting has on late nests. Nest searches and nest monitorings were conducted in eight, 2000-acre plots scattered across northern Missouri ten miles from the Iowa border. These were paired with similar plots in Iowa. Iowa is closed to dove hunting and Missouri is open to dove hunting. This was the first year of a two-year study.

B. Cooperative Programs

This was the third year for a YCC program at this station. It was a non-resident camp of 20 enrollees and five staff members.

Enrollees came from 11 towns. One major undertaking was to pour a 20' x 60' concrete parking apron in front of the shop. Another was painting the metal equipment building. Having Camp Director Kenneth Dudley return a second year certainly helped smooth all operations and business.

A non-resident YACC camp came on board in late August. The camp under the administration of Mingo YACC was scheduled for three work leaders and 21 enrollees. The number of enrollees never quite reached full strength. One of the three work leaders quit, and before he could be replaced the "freeze" on man-power and money occurred. This also prevented vacated enrollee slots from being refilled, and by the end of the year the camp consisted of two work leaders and 11 or 12 enrollees. Most of their work on the refuge has been of the "clean-up, paint-up, spruce-up" kind. They also helped in the goose gizzard collection and manning the hunter check station to enable harvest computations. This latter job really "chews up the manhours", consequently, YACC released refuge personnel for jobs that would have had to be delayed or perhaps not done without their help. Off-refuge projects took them to several communities and a State Wildlife Management Area.

C. Items of Interest

Assistant Refuge Manager Kuykendall transferred from Aransas NWR here January 19. He completed Refuge Academy training in March, YCC workshop in April, and Regional Office Orientation in May.

Outdoor Recreation Planner Moyer entered on duty June 19, to become this refuge's first ORP. Ed's experience includes seasonal work with the Park Service and over two years with the Peace Corps in Fiji. He attended the Association of Interpretative Naturalists workshop from October 31 through November 2.

Refuge Clerk Turner was changed from GS-4 Permanent Part-time to GS-5 Career Seasonal status. She participated in a three-day administrative workshop in June.

Narrative Report Credits:

Introduction, Interpretation and Recreation - Outdoor Recreation Planner Moyer

System Status, Habitat Management, and Wildlife -

Assistant Refuge Manager Kuykendall

Climatic and Habitat Conditions, Construction, and

Maintenance, and Other Items - Refuge Manager Manke

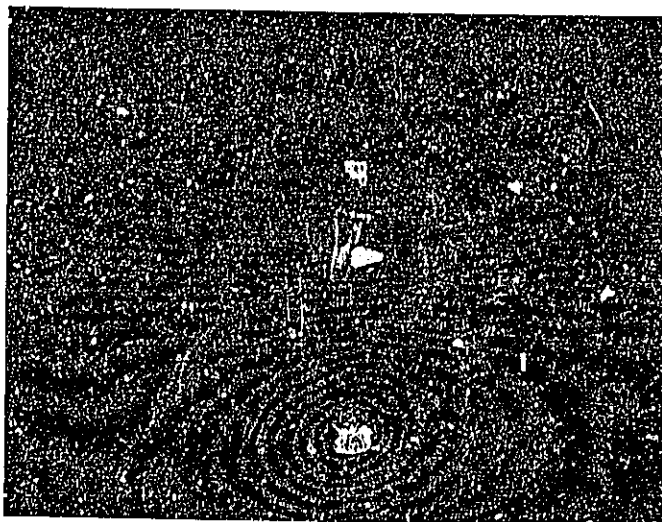
Typing, Editing, Correcting, Binding - Clerk Turner

D. Safety

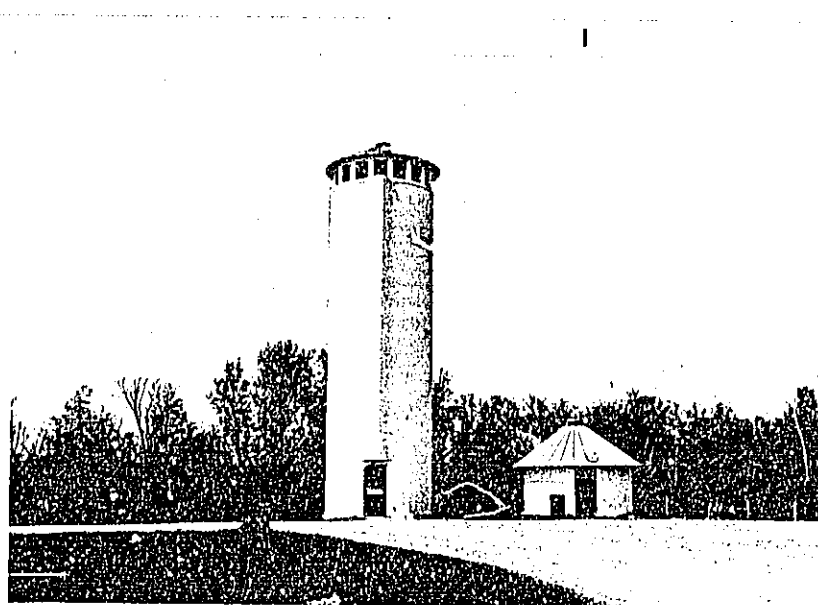
No lost time accidents occurred during the year. It has been 5004 days since a lost-time accident has occurred at this station.

Defensive Driver Training, an eight-hour course, was completed by YCC staff, YACC staff and enrollees, and Mr. Moyer. A first aid course was completed by YCC staff and enrollees.

During regular safety meetings films viewed were "Listen While You Can" (hearing protection), "The Shield" (eye protection), "Everything To Lose" (think safety and safely), "Roll of Drums" (be aware and use common sense), and "Accident Prevention Through Equipment Guarding" (value of guards). Several discussions centered on potential hazards and corrective actions. Use of seat belts in automobiles and on tractors was also discussed. The use of seat belts on tractors always seems to stir some controversy. Some say it is a safety measure, some say it is a trap. More documentation is needed.



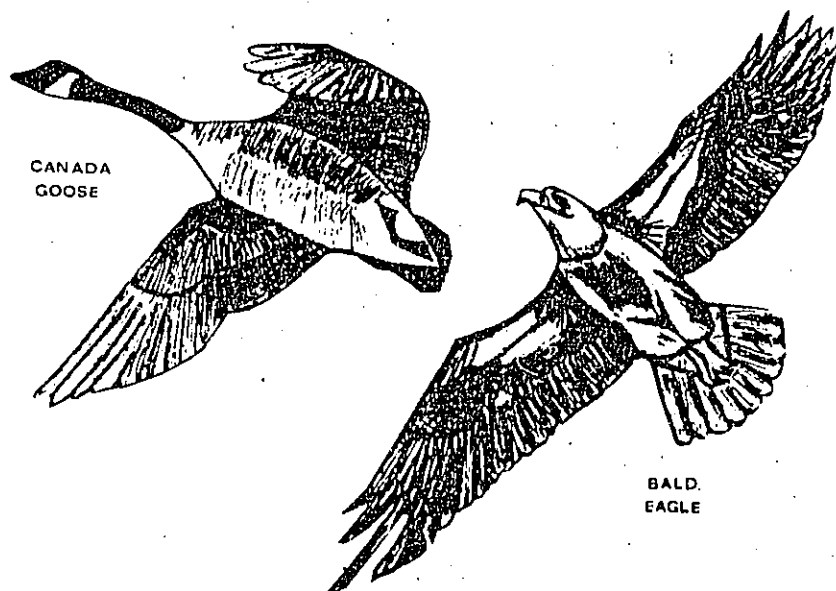
Other Items - ORP Moyer at his "desk" in the corner!



Other Items - Sinc observation tower, or
ORP's castle maybe?

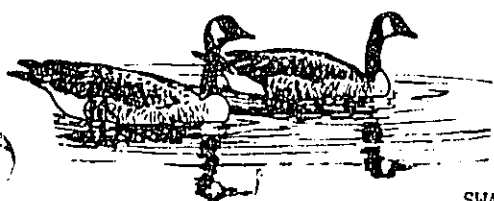
WARNING!!

KNOW THE DIFFERENCE



If one hunter shoots an
EAGLE, all could lose
the privilege of hunting
on this refuge.





WELCOME TO
SWAN LAKE NATIONAL WILDLIFE REFUGE
OPEN HOUSE AUTO TOUR
Sunday, October 22, 1978

A 40-minute leisurely drive will take you through the heart of the refuge over some 11.2 miles of road. CHECKING YOUR CAR'S ODOMETER WILL HELP YOU TO USE THIS GUIDE.

MILE 0.5: The view of Swan Lake to your left has been cleared for the next 1.3 miles by a local contractor so that this levee can be stabilized. At normal capacity, the lake covers 1100 acres. We manipulate this level to encourage smartweed, millet, and other plants used as food by ducks and geese. You'll see more CANADA GEESE here than perhaps anywhere else along the tour. Other highly visible birds are ducks, egrets, great blue herons, and white pelicans.

MILE 2.0: The TOWER. There are 68 metal steps that lead you up a spiral staircase to the observation platform 44 feet above ground. The converted silo is a local landmark and affords a panoramic view of Swan Lake, marsh and field. A boardwalk trail to the photo blind begins a short distance to the northwest, and PUBLIC RESTROOMS are just south.

As you continue the tour, your route takes you through some of the refuge cornfields. There were 500 acres planted this year and are left standing for geese and other wildlife.

MILE 3.0: Here at Levee 5, we divert water from Silver and South Lakes into Swan Lake. This is a favorite fishing spot.

As you continue for the next mile, your route goes through fields of milo eaten by both ducks and geese. This year we planted 700 acres.

MILE 5.5: Here, just a few yards southeast of the pit toilet on the west shore of the 3050-acre Silver Lake, is one of our cannon net sites. The graveled area is baited with corn, attracting a compact group of geese. Developed here, the Dill-Thornberry Cannon Net permits us to "shoot" a net over the birds. Then they are banded, sexed, aged, and released.

MILE 6.4: This gate diverts water from Silver Lake to Swan and South Lakes.

MILE 7.7: Floodwaters over the spillway a short distance further along this route will be diverted into Yellow Creek by this "training dike".

MILE 8.0: Look hard for the beaver holes in the bank of the borrow pit to your right. Properly sized wood for dams and lodges is scarce, so most of our four colonies of refuge beavers must be satisfied with less classic homes. Examples of their handiwork are the felled cottonwoods to your left, 1.8 miles ahead.

MILE 10.4: The 1400 acres of winter wheat planted this year will be browsed to bare ground by the geese. At the State Headquarters early on October 24, hunters will draw for goose pits like J-2, 80 yards out in the field. STEEL SHOT WILL BE REQUIRED FOR ALL HUNTERS WITH 12-GAUGE SHOTGUNS ON THE REFUGE whether or not their pits are within 150 yards of water.

MILE 11.2: The East gate. Turn right to Mendon, 1 mile south. Left will take you towards Marceline or Brookfield.

